

The Use of a Check Sheet to Determine Management Priorities for Improvement of Beef Farm Sustainability

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Abstract

A check sheet designed to allow farmers/ranchers and educators to assess the sustainability of a beef cattle farm has been developed by a group of producers, Extension agents, USDA personnel and NCAT technical specialists. The check sheet contains more than 200 questions intended to assess economic productivity and environmental well being of a farm. The primary basis of the check sheet relates to the assumption that beef production is pasture-based so the questions revolve around grazing management decisions. The goal of the check sheet is to stimulate critical thinking by asking a series of questions. As the producer and educator work through the check sheet, items needing attention are checked to determine information the producer needs to achieve the goals of the farm and farm family. Sections of the check sheet are as follows: Inventory of farm resources, Cattle and forage management (herd health and reproductive management; breeding, genetics, and selection program; nutrition management), Farm management (records, farm planning, marketing), Farm goals, Assessment of individual pastures, Assessment of soils, Assessment of watershed. The check sheet is available through our website (www.attra.ncat.org).

Introduction

The two key factors in assessing the sustainability of an agricultural enterprise are profitability and use of natural resources. To be sustained over a short term, the enterprise must be profitable; to be sustained over a long time period, the management of the natural resources such as soil and water must be considered.

The role of ruminants in feeding the world is to change resources such as grass, hay, crop residues--and other products that cannot be used by humans into a high quality source of food. Therefore, beef cattle production should focus on the management of pastures and other forage type feedstuffs.

Discussion

Planning a beef cattle program should begin with the whole farm. Too many producers simply focus on the beef cattle herd (genetics, reproduction, etc.) without considering

the total management of the farm or ranch to match resources to the animal requirements. One way to view cattle producers is as grass farmers. The product being produced and sold is “grass”, through the cattle. Assessment of resources (land capability, fertility, management and labor, erosion problems, etc.) should be accomplished before establishing a herd.

The type of cattle enterprise as well as type of cattle which will best fit the resource base is a next step, followed by management decisions such as when to calve and wean. The efficiency of a cow-calf operation is greatly impacted by calving and weaning dates and they should be matched to the pasture productivity and forage availability to minimize the use of harvested forages and purchased supplements. A key decision also is determining what product is being sold as well as where and how. An increased interest in natural beef and organic marketing is allowing some producers to develop niche-marketing approaches. In some cases these markets may require a different type of animal than the more traditional production of choice grade beef through feedlot production.

Concerns such as health programs and handling of cattle also impact the management of the operation. Social concern exists about the overuse of antibiotics and other products, such as implants. Decreasing the stress of cattle and being aware of the impact of animal behavior in the everyday handling of cattle can reduce disease and health costs. Health products are an expense, which can mean the difference in profit and loss in hard times and should be used judiciously.

Feeding is the main expense in production of the animal. Under most conditions (except for very high land prices), the proper use of pastures to meet the nutritional requirements of beef cattle is the most important factor in decreasing cost of production. Pasture decisions primarily involve the grazing system and choice of forages. The present approach is to get away from monocultures and increase the diversity in pastures with several grasses and legumes in one pasture. The judicious use of nitrogen fertilization both because of expense and water quality is becoming increasingly important. The use of controlled grazing (management intensive grazing) has also gained in popularity, although most of the approach to grazing management is a rediscovering of the type of management advocated in the 40' and 50's.

Another key component in profitable beef cattle production is the fertility requirements of the pasture. Nutrient recycling, allowing the animal to put manure back on the pasture in a uniform manner, is important. Most of the minerals harvested by the animal when eating pasture is returned to the pasture and fertility, once brought up to a certain level, can be maintained more easily if a good grazing system is utilized to evenly distribute manure.

Conclusion

Enclosed in this document is the beef cattle farm sustainability check sheet. The check sheet will be the focal point for discussion in the course; therefore, each person should review the check sheet as to portions applicable to his/her operation. Questions

Acknowledgements

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References

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BEEF FARM SUSTAINABILITY CHECK SHEET

Introduction

This check sheet was designed to stimulate critical thinking in planning a farm on which a primary land use is production of beef cattle. The sustainability of a farm relates to many factors revolving around farm management, use of resources and quality of life. The series of questions is intended to stimulate awareness rather than serve as a rating of management practices. Carefully think about how decisions made in one area impact the results in other areas of your farm. Use this guide to define areas in your farm management that might be enhanced as well as to identify areas of strength.

Note to the educator: Suggestions on how to use the check sheet

The check sheet is quite lengthy and can be rather intimidating, to both educator and producer. Having evaluated the use of the check sheet on several farms, the authors make the following suggestions for its use:

- Send the check sheet to the producer prior to the first meeting. Allow 2-3 weeks for the producer to work through it.
- Be flexible. The producer and the educator should be comfortable in working through the process. Remember that the check sheet is a guide to assess the operation as to strengths and weaknesses.
- Review the questions beforehand. Then, when going through them with the producer, don't just read the questions but address them in your own words. If a question has been addressed in general conversation, or if a question doesn't need to be answered because of the way a previous question was answered, move on to the next question. If the producer doesn't have a problem in a certain area, then the subset of questions pertaining to that problem need not be addressed. Having aerial photos, soil maps and topographic maps on hand during the assessment has proven useful.
- Since the time needed to completely work through the check sheet may be longer than available for a single farm visit, two or more visits may be in order. The check sheet is most useful in making the producer aware of management alternatives. Therefore, defining the items for which he or she needs more information is most important.
- Support materials can be procured from ATTRA to use as references.

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INSTRUCTIONS: Complete the following questions to present an overview of the farm and management priorities.

INVENTORY OF FARM RESOURCES AND MANAGEMENT

Size of farm (owned)_____ Acreage rented_____

Number of: Mature cows_____ Replacement heifers_____ Stockers_____

Other types of animal and farm enterprises_____

Breeds of cattle_____

Number of pastures on farm_____ Number of ponds and water sources_____

Livestock market and months you market in_____

Months you calve in_____

How many acres of the following do you have?

predominantly cool season perennial grasses_____

predominantly warm season perennial grasses_____

mixture of warm and cool season grasses_____ pastures with legumes_____

cool season annuals_____ warm season annuals_____

pastures that can be stockpiled for late fall/winter grazing_____

Which practices are part of your grazing system? short duration, slow rotation,
continuous grazing

Give major soil types and productivity indexes for the farm

When and with what do you fertilize? _____

What are the top five strengths of your operation?

What are the top five problems?

Do you have written goals for your operation (briefly list if you do)?

INSTRUCTIONS: In the margin for each question, place a checkmark if it needs further thought. Leaving the item blank indicates that the area covered in that question is not a problem or an issue in the management program. Keep in mind that some questions are repeated to show interrelationships.

I. CATTLE AND FORAGE PROGRAM

A. Herd health and reproductive management

Well-nourished, stress-free animals are the foundation of a sustainable beef cattle program. This means animals are healthy and perform better, are easier to manage and care for, and can more easily handle adverse conditions. While seemingly a simple question, this is intended to stimulate quick evaluation of any stress the animals may have. Simply walk into your herd and take a look at your animals.

____ What is the overall appearance of your whole cattle herd?

____ Do your cattle appear to be thrifty, contented, and performing to your satisfaction?

A good health and reproductive management program will allow a producer to avoid problems. Most reproductive management problems involve poor nutrition during some period of the year. A well-defined breeding/calving season helps a producer manage a cow herd more effectively. Nutrition of a cowherd revolves around a well-designed forage management program including coordination of calving with forage availability and quality. The forage management plan, by ensuring an adequate supply of high quality forage throughout the year, will reduce the incidence of health and reproductive problems in the herd. If fed properly, cows will cycle and breed early in the season, preventing problems with open (non-pregnant) cows or late-calving cows. Some people presently feel it is best to calve cows when pasture is actively growing; we would

advocate that when cows reach peak lactation (30-60 days postcalving), they are on pastures when forage is in peak growth.

____ What are your herd health goals?

____ Do you:
pregnancy check cows? _____
fertility test bulls? _____
have a defined breeding/calving season? _____
calve the majority of your cows the first 21 days of calving season? _____
routinely condition score cows? _____
have a clean area for calving? _____
feed and water in clean areas? _____
have handling facilities which minimize stress to livestock and handler? _____
use handling techniques that minimize stress? _____

____ What vaccinations do you give? _____

____ When, how often and on what basis do you deworm? _____

Do you have problems with (*if you have problems in any area, answer indented questions; if not, go on to next one*)

____ open cows (more than 10%) or late calving cows? _____

What condition scores are your cows going into the winter?

____ at calving? _____ beginning of breeding season? _____

____ calving difficulty (pull more than 10% of the calves)? _____

Do you use easy-calving bulls for first-calf heifers?

____ Are cows and heifers in good condition but not too fat at calving?

____ abortions/embryonic losses _____

From where does water flow into your farm?

____ Where do cattle access water?

____ Are your cattle heat-stressed before or shortly after breeding?

Have you submitted fetuses or tissue samples to a lab?

Do you vaccinate for infectious diseases that cause abortions in your area? _____

_____ calf scours and/or pneumonia? _____

Are cows receiving adequate nutrition prior to calving?

Do you have clean, dry areas for cows after calving?

Are your cows heavy milkers?

_____ internal/external parasites? _____

Do you know if you have any or do you just treat as if you do?

Do cattle look unthrifty?

Do you attribute a lot of unthrifty problems to fescue?

Do you rotate cattle to clean pastures or continuously graze?

Do you increase feed for cattle in weather extremes?

Have you brought cattle in from arid or western range land?

Do you have a problem with flies?

_____ grass tetany? _____

What are the magnesium, calcium, and potassium levels in the forage where problems occur? _____

What are the potassium and phosphorus levels in the soil where problems occur? _____

Do you have legumes in problem pastures?

Do you supplement with magnesium in late winter?

_____ other health problems? _____

(skip this section if you do not have fescue pastures)

The endophyte level in tall fescue pastures is a management concern. Because seed that is stored for a time period before being sown reduces the infection rate, farms can have pastures with various levels of infection. While most producers make the assumption that pastures are infected, sampling each pasture to determine its specific level of infection could be worthwhile. If a pasture is less than 50-60% infected, its management might be different than if 80-90% infected. Put simply, the best way to manage high endophyte pastures is to use minimal nitrogen fertilization, include

legumes, control-graze and cull animals with obvious heat stress problems. Do not mistake other stresses such as parasites, poor nutrition, or extremely hot and humid weather as indicators of fescue problems.

_____ Do you have problems with fescue toxicoses (or heat stress)? _____
Are you sure it is due to fescue?

_____ Have you tested your pastures for endophyte infection?

_____ Are you aware of when fescue is most toxic to cattle?

_____ Could the signs be caused by poor nutrition or parasites?

_____ Do you graze or mow endophyte pastures to control seedhead development? _____

_____ Do you minimize nitrogen fertilization of infected pastures?

_____ Do you have legumes in infected pastures?

_____ Do you encourage diversity of species with good grazing management?

_____ Do you cull animals and their offspring which show extreme heat stress?

Stress can be additive, in that one stressor alone may not be a problem, but when multiple stresses occur animals perform poorly or get sick. For example, parasites may not be a problem in well-nourished animals but cause problems when animals are under nutritional stress. Stress to animals can be decreased by careful design of handling facilities, proper consideration of animal behavior, adequate nutrition and awareness that drastic changes in diet (for example, weaning a calf in drylot with hay and grain) can stress animals. Behavior of animals can cause stress to both handler and animal.

_____ Are animals stressed
_____ when worked? _____ during weather extremes? _____
_____ at weaning time? _____
_____ Do you have wind breaks in winter?

_____ Do you use handling techniques that minimize stress?

_____ Do you use low-stress weaning techniques?

_____ Is forage availability high enough to meet animals' needs to prevent sickness at high stress times?

What are the condition (body fat) scores of animals which show stress?

Is there good quality and adequate quantity of water during hot weather?

B. Breeding, genetics and selection program

Breed selection should be based on the actual merits of a particular breed for a specific marketing program or forage utilization program. Producers tend to base breed or sire selection on popularity of breed or pedigree without using a well planned breeding or crossbreeding program. Consideration of type of cattle and of the kind of environment or management the seedstock were produced in helps predict how they will perform in another person's program. For example, cattle from one geographical region may not perform well in another or cattle developed on a high grain diet may not perform well on a pasture program. In other words, your cattle may not match your resources. Evaluation of breeding stock must include traits of economic significance; for example, use bulls with low to moderate birth weights on heifers. Although we tend to emphasize traits such as adjusted 205-day weights, actual weaning weights or sale weights have more impact on income and thus should be used in making management decisions.

What are the goals of your breeding program?

_____ Do your animals match your resources?

_____ Do you select animals which have been raised in a management program or environment similar to yours?

_____ What traits do you select for or cull against when choosing sires or replacements?

_____ On what basis do you choose herd sires and where do you purchase sires?

_____ Why did you choose the breeds you have?

_____ Are there breeds that would better fit your present or potential marketing program?

_____ Are there breeds or breeding stock that would better fit your forage or management?

_____ On what basis do you sell surplus animals?

_____ Do you raise or purchase replacement heifers?

_____ Could you purchase them more economically than raise them?

C. Nutrition management

Grazing system and choice of forages are the key components of a cattle nutrition program. All aspects of grazing, including when and how long animals graze, change the pasture by affecting plant species diversity, plant population and plant density. In a sustainable system, these changes should improve the pasture's ability to meet the nutritional needs of the animals, minimizing the need for harvested forages and purchased feeds. Most beef cattle producers have two ways of harvesting forages: baling hay or grazing animals. We Americans have tended to allow animals to graze grass down to the ground, and then when pasture becomes limiting, feed hay and/or purchased supplements. Producers in other parts of the world avoid the prohibitive costs of baling hay (equipment needs, fertilizer costs, fuel use, etc.) by using management techniques that more efficiently utilize the forage and lessen dependence on harvested forages. By knowing what forage is produced, when and how, we can feed our animals on good pasture for a longer period of time. We can change the forage production curve through management. Additionally, we can impact the animal's needs by changing the time of the greatest nutrient requirement, peak lactation, by timing calving and matching the forage production to the lactation curve. While most people strive to have cows in condition score 5 at calving, the critical point is to have cows gaining weight before breeding.

What are your goals related to nutrition of your cattle program?

_____ Does your forage base match your animals' needs--can you meet those needs with pasture? _____

Are cows on best forage at peak lactation and when going into breeding season? _____

Do you have adequate vegetative forage daily (1800-2500 lb DM/acre) for lactating cows to gain well before breeding? _____

Are calves weaned and cows on good pasture in order to gain weight before winter? _____

_____ Does your forage management program ensure adequate forage availability

1) during the grazing season? _____

a) Do you run out of forage and have to feed hay in late summer? _____

b) Do short pastures decrease performance (weaning weight) of calves? _____

2) to extend the grazing season? _____

If not, would more species diversity help either option? _____

_____ Could changing calving season allow you to more adequately meet nutrition requirements of cows with forages you have rather than changing the forage base? _____

_____ Do you cut hay at the proper time to insure good quality? _____

Under continuous grazing, as the season progresses, grazing becomes spotty, as some areas within a pasture are overgrazed and others are undergrazed. Some plants mature and quality decreases while other plants do not persist because of depleted root reserves. Consequently, animal performance declines because of poor availability of quality forage and subsequent decreased intake by the grazing animal. Controlled grazing allows pastures to be grazed sooner in the spring and later in the fall, with an availability of forage that allows high animal intake and at the same time gives other pastures the opportunity to grow and rest. Some producers can accomplish this simply by closing gates and using separate pastures in sequence.

_____ Do you have enough pastures to set up a rotational grazing program, i.e. move cattle at least once a week? _____ If not, can pastures be divided easily?

Do your sources of water for livestock prevent dividing pastures?

_____ Do your cattle have access to all your pastures in late winter when cool season forages first start to break dormancy, so that grazing defoliates the plants and keeps the forage from growing rapidly? _____

_____ Do your animals spot-graze pastures to the point that some areas are severely overgrazed and some areas undergrazed and then mowed off?

_____ Does your haying program include cutting pastures which are not needed for grazing rather than allocating areas of the farm just for hay production?

_____ Do you use haying to control pasture growth and cut the excess early enough to allow adequate regrowth with optimum species diversity before hot, dry weather?

_____ Are special grazing techniques such as forward grazing used to meet the needs of animals with higher nutrition requirement than others and also properly utilize available forage? _____

_____ Is stock density high enough to allow adequate control of pastures or could you group cattle to increase stock density?

The comfort zone of beef cattle is 30-75° F (effective temperature including wind chill). Outside of that temperature range, cattle have to expend energy to keep warm or cool. A cow of average condition has an increase in energy requirement of 1% per degree drop below 30 degrees; a thin cow has an increase of 3% per degree drop. Thus, having adequate condition on cattle going into the winter can help decrease maintenance costs and save feed/hay. Approximately 30 days before onset of cold weather, condition score cattle and address the following:

_____ Do you prepare your cows for winter by adding condition? _____

_____ If spring calving, have calves been weaned before cold weather to decrease nutrition requirements of cows, and allow cows to regain weight by putting them on good quality pastures? _____

_____ Are some of the mature cows too thin going into the winter? _____
 _____ too fat for good calving? _____
 _____ Are replacement heifers growing adequately and in good but not excessive
 condition? _____
 _____ Are your thin cows on the best pastures with adequate availability of
 quality forage? _____
 _____ Do they need some grain supplementation if forage availability is limiting?

 _____ Have pastures been conditioned for putting weight gain on cows by stockpiling
 high quality forage? (over 2500 lbs of dry matter per acre of vegetative
 forage)? _____

II. FARM MANAGEMENT

A. Records

The decision-making process needs to include a standard analysis of farm records to evaluate production and to determine if and how production might be increased economically. Many times decisions are based on recommendations to increase the biological efficiency of an operation, e.g., increasing weaning weights of calves, without any thought given to the economic efficiency (i.e., does increasing weaning weight increase net return.) Actual costs of production should be calculated for each farm, as cost averages from other operations may be quite different from your own farm's costs.

What are your farm management goals?

_____ Do you make good use of a record-keeping system? _____
 _____ Do you evaluate production based on per acre costs or per cow costs when
 making decisions? _____
 _____ Do you know your actual cost of production per acre? _____
 per animal? _____
 _____ How many pounds of beef do you sell per acre? _____
 per cow? _____

Hay is a major expense for many cattle operations. Usually grass is considered cheap, but baling hay costs are quite variable, depending on land values, fertility costs, labor, and availability of equipment. Before a producer makes decisions related to producing or buying hay, using more pasture (stockpiling) or feeding hay a longer period, these costs should be calculated.

_____ Do you know what it costs to produce, harvest, and feed a bale of hay?

 _____ graze an acre of pasture? _____
 _____ graze one cow for one day? _____

B. Farm planning

One goal of a whole farm plan is to determine whether the land can be used more efficiently; for example, grazing cattle and sheep on the same pasture or using goats to control brush. Additional enterprises such as poultry or hogs can add to the income of the farm.

_____ Would diversification with other animal species add some benefit or add extra income? _____

_____ Would adding other species to your grazing program better utilize the forage? _____ If so, what are the considerations? (e.g., labor, predators, fencing, market, hunting) _____

Fertilization of pastures can be a great expense for cattle producers. A rotational grazing program helps to minimize these costs by having the manure from the grazing animals distributed back on pastures rather than in isolated areas, such as around shade trees, water tanks, etc. Another opportunity is to use chicken litter or similar on-farm products to increase organic matter and nutrient content of soils. Conversely, producers who have used chicken litter extensively might be able to sell litter for cash toward purchased fertilizer (lime, N). An important but often overlooked component of a good pasture fertility program is level of organic matter, which influences the microbial activity of the soil.

_____ Are you testing soils in each pasture or field at least every three years? _____

_____ Are you making effective use of your fertilizer expenditures? _____

_____ Are you using the additional forage you produce with purchased inputs? _____

_____ Could you decrease N fertilizer through more effective use of legumes? _____

_____ Are you using chicken litter/animal manures/municipal sludge products? _____

_____ Would using those products be more cost-effective than using commercial fertilizer? _____

_____ Would using components of fertilizer, i.e. K or N, be more effective? _____

_____ Would using lime allow a decrease in fertilizer expenditures? _____

Equipment expenditures on a farm can be very costly, yet also be part of the tax consideration, which has an impact on purchasing decisions. Proper sizing of equipment to the job and minimizing equipment maintenance and operational costs are also important. In some cases, hay can be purchased or custom baling used to decrease farm costs. Some producers make equipment purchases for non-economic reasons and have equipment that cannot be justified based on economic return to the farm.

_____ Do you own more equipment than you need? _____
_____ Could you decrease the equipment you need if you relied more on grazing?

_____ Do you buy equipment for tax reasons, even though you don't need the
equipment? _____
_____ Does that equipment expenditure for tax reasons really increase your net
income? _____

Feed expenses are usually estimated at 70% of the cost of maintaining a cow for a year. Having to purchase supplemental feeds and using harvested forages can increase the expenses of a cattle operation. As referenced earlier, good grazing management can decrease those out-of-pocket expenses. Conversely, there are times when supplements can be used very effectively and buying hay might be more economical than producing it on the farm.

_____ What are your primary purchased feed expenditures? protein, energy, minerals,
hay
_____ Could you decrease these by
better grazing management to be more efficient in pasture
utilization? _____
improving fertility of your
pastures? _____
harvesting better quality
hay? _____
having better or more diverse forage species to extend the grazing
season? _____
changing the time of year when nutrition requirements of animals are
highest? _____
_____ How do you know which, if any, of the purchased feeds you actually need?

C. Marketing

Marketing cattle is an area where most producers could easily increase their net income. Knowing when to buy and sell cattle has a large impact on returns. There are many options producers can consider, such as being part of a marketing alliance or cooperative, creating markets for specialty products, timing marketing better or owning cattle longer.

What are your marketing goals?

_____ Do you market your animals when the price is best?

_____ Could you change your management (forage, calving season, etc.) to allow you
to sell cattle on a more timely basis?

_____ Other than the local sale barn, what merchandising options are there for your cattle? _____

_____ Would it be cost effective to retain ownership of your cattle through another growth phase? _____

_____ Could you produce a more marketable product with a change in your breeding program? _____

_____ Are you in an area where niche marketing could be established, such as near a metropolitan area where direct-marketed lean beef would have potential? _____

_____ Could you cooperate with neighbors to produce packages of cattle to be marketed at a premium, i.e., potload of similar cattle? _____

III. FARM GOALS

Farm planning is an on-going process that requires that farm families know where they want to go and how to get there. In determining goals, most farmers have a general idea but lack a specific plan. Putting goals on paper can provide a framework for making management decisions.

_____ As you consider the goals of your farming operation, are you examining your livestock production program to make it more cost effective? _____

_____ assessing the soil, plant, and water resources? _____

_____ analyzing your marketing program and the diversity of products available to market? _____

_____ evaluating your quality of life from a family and community perspective? _____

Once you have written down your goals, other decisions are easier. You can plan for farm expenditures rather than buying what seems to be needed at the time.

_____ How do you decide your priorities for expenditures on the farm with a given amount of money? _____

equipment

_____ feed

_____ pasture

_____ fertilizer

_____ fencing

_____ animals

_____ Do you know your return on investment for those expenditures?

_____ Is the farm income distributed over the year? _____ Are there things you can do to spread out income? _____

The following questions are a summary of your thought processes to this point. The three sections that follow are intended to be stand alone assessment tools for evaluating pastures, soils and watershed management to finalize your farm assessment.

_____ Have your perceptions of your weaknesses and strengths changed?

_____ What are the highest priority areas for you to emphasize?

_____ Have you put on paper your goals for your family and your operation?

IV. ASSESSMENT OF INDIVIDUAL PASTURES

Routine pasture assessment can be used effectively as a feed budgeting process as well as an evaluation of how well your grazing program is working and how individual pastures (paddocks) should be managed. Individual pastures should be regularly evaluated to determine short-term management decisions, such as grazing pressure, fertility needs, forage availability within a short time span, potential for hay production, etc. Pasture assessment can be as important to your operation as animal evaluation (and economically, may be more important). Each pasture should be assessed at various times of the year. Additionally, when assessing a pasture, evaluate how previous management and use over time has influenced the pasture.

What are your pasture management goals?

_____ Do you need to make better quality forage available, which might be accomplished with haying earlier or using better grazing practices?

_____ Do you know how individual pastures rank in productivity?

_____ Are there spots of bare ground within pastures?

_____ Do you have any erosion problems?

_____ What changes in plant species are occurring?

_____ Are these changes desirable or undesirable?

_____ Is the pasture grazed fairly uniformly or are there areas of spot grazing?

_____ Is there adequate but not excessive residue in the pasture?

_____ Is the residue decomposing properly or is it thick enough to contribute to lack of seedling development of other species, such as clover?

_____ Are the animals doing a good job of controlling the edible weeds, such as ragweed, when vegetative?

_____ Which weeds or brush are not being controlled by grazing?

_____ Are there compaction or pugging problems?

_____ Could a change in water/mineral feeder location or the shape of pasture impact the grazing pattern?

_____ Is wildlife habitat appropriate?

_____ Is water runoff excessive, especially on slopes?

_____ Do you need more forage, which might be gained through an application of fertilizer or a longer rest period?

_____ Are pastures resting long enough to allow proper plant regrowth and replenishment of root reserves?

_____ Are there areas of pastures which need fertilizer and other areas which don't?

_____ Which field areas dry out first, second, and last under drought conditions?

_____ Do you have a plan for which pastures are used at various times of the year?

_____ Do you drive on pastures, which may retard pasture growth and create compaction problems?

V. ASSESSMENT OF SOILS

Soil is the natural resource foundation of any farm. Proper management of the soil is the basis for managing the plant-animal interface necessary for a sustainable livestock farm. Whole farm planning includes assessment of soil characteristics. First, study how everyday management influences nutrients, moisture levels and tilth. This is the basis for decisions on fertility and grazing, which will affect species diversity and

erosion problems. It is important to understand where your quality soil is as well as how to improve the quality of all your soil. A nutrient management plan can be used to determine sources of nutrients that can improve the farm's productivity at minimum costs.

_____ Do you have soil maps of your farm and understand the productivity index of each soil type? _____

_____ Do you have specific problems to address, such as fragipans, poor drainage, compaction? _____

_____ What is the microbial activity in your soil? _____

What does the soil smell like? _____

_____ What is the tilth? _____

What does a handful feel like? _____

_____ Do you have a nutrient management plan for each pasture? _____

_____ When was your last soil test? _____

_____ What is soil pH, salinity and sodium (Na) saturation? _____

_____ Do you routinely use lime? _____

_____ What is the organic matter level in your pastures/fields? _____

_____ How deep is the dark surface layer? _____

_____ Is it less than the natural undisturbed soils in your area? _____

_____ How many days does it take grass or crops to exhibit drought stress? _____

_____ How hard are earthworms to find? _____

_____ Is there evidence of earthworm activity such as castings on the surface? _____

_____ How fast do manure piles and forage thatch degrade? _____

_____ Are any plants yellow, spotty or purple-colored? _____

_____ Do you have any soil nutrient deficiencies or imbalances that impair forage and animal production? _____

_____ Do you have considerable variation of productivity level and nutrient level within pastures? _____

_____ Are soil fertility levels adequate to meet forage production targets? _____

_____ Are forage production targets too high, leaving inputs that are undesirable for environmental or economic reasons? _____

_____ Would a change in fencing allow better use of pastures based on productivity of soil? _____

_____ Are any erosion problems due to a lack of water flow control, lack of adequate cover or lack of infiltration?

_____ Do you have soil compaction problems in any fields?

_____ How long does it take for standing water to seep in?

_____ Do you regularly sample soil of individual fields or soil types?

VI. ASSESSMENT OF WATERSHED

Every farm is part of a watershed. Water flows onto the farm and leaves the farm. What happens in the process is the responsibility of the farm owner and can have an impact on the water quality downstream as well as influencing the soil erosion problems on the farm. An understanding of the geological formations of the farm may assist in evaluating water flow and managing the water quality.

_____ What are the water drainage patterns into and from your farm?

_____ Are there litter banks (debris piles, usually wood) present anywhere on your land?

_____ How efficient are you in retaining water on your farm and in your soils?

Riparian areas are the edges of streams, wet weather creeks, ditches or any area where water flows through at various times of the year. Management of these areas can have an impact on erosion and water quality.

_____ Do you have major riparian areas, with flowing water in them most of the time?

_____ Do you have riparian areas with large amounts of water at limited times during the year?

_____ Do you have a management plan for your riparian areas?

_____ Does your plan allow livestock frequent, limited access to help manage the vegetation of riparian areas?

_____ Are riparian areas managed for wildlife habitat?

_____ Do you have buffer zones adjacent to the riparian areas?

_____ Are farm ponds full of algae?

_____ Considering your whole farm as a watershed, do nutrients which contribute to poor water quality leave your farm?

_____ Do you time your fertilizing or spreading of litter/manure to prevent runoff of nutrients? _____

_____ Do aquatic organisms downstream indicate good water quality? _____
Has this changed? _____

_____ Do you use pesticides/herbicides tactically for localized infestation?

_____ If using poultry litter or other manures, do you test soil to monitor nutrient management of individual pastures? _____

_____ Does your soil absorb and retain rainfall? _____

_____ Is the vegetation adequate to allow water penetration into the soil and prevent excessive water flow? _____

_____ Are some areas overgrazed to the extent that water flow is excessive?

_____ Do you have an understanding of the nutrient flow on your farm (inputs and outputs) and know what percentage retained on the farm?

VII. SUMMARY

Now that you have completed the assessment of your farm, go back through the questions you indicated as high priority for increasing economic or environmental sustainability. Then use appropriate reference materials/educators to explore potential changes in your management program or planning. Spend time reviewing the areas that could be emphasized to allow you to meet your goals.

Related ATTRA materials

Listed below are ATTRA publications that may be useful for addressing many of the questions presented in the check sheet. (www.attra.ncat.org)

Sustainable Pasture Management
Rotational Grazing
Matching Livestock and Forage Resources in Controlled Grazing
Meeting the Nutritional Needs of Livestock with Pasture
Nutrient Cycling in Pastures
Whole Farm Nutrient Management
Sustainable Soil Management
Integrated Parasite Management for Livestock
Introduction to Paddock Design and Fencing-Water Systems for Controlled Grazing
Alternative Beef Marketing
Financial Tips and Resources for Grass Farmers
Sustainable Beef Production
Alternative Fly Control
Grass Based and Seasonal Dairying

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